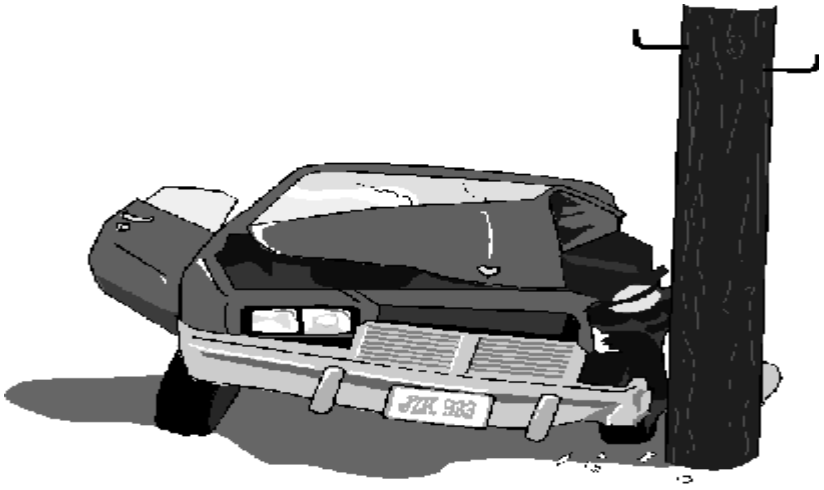
DAMAGE ANALYSIS FOR CONSISTENCY AND DETECTING FRAUD

A Presentation Prepared by
Rimkus Consulting Group, Inc.

Prepared For:

Texas Department of Insurance
Annual Fraud Conference

March 1, 2011



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INTRODUCTION
Rimkus Consulting Group, Inc.

Rimkus Consulting Group, Inc. was formed in 1983 by a select group of consultants and engineers qualified in a variety of professional and technical disciplines. We began working primarily in the analyses of industrial accidents, construction disputes, contractor surety defaults and associated areas.

In 1985, we expanded the scope of our work to include the full-service needs of insurance, legal and risk management firms. At the outset, we focused on cultivating a staff of university educated, broadly experienced men and women. Today, with more than 300 full-time and contract consultants on staff, there are few areas of expertise we do not embrace.

Our home office is in Houston, Texas. We have twenty-five offices across the United States as well as two international offices. Please see our list of office locations below.

Our sphere of work is unlimited. *We work anywhere!* Our investigations have ranged from San Francisco to New Jersey, Florida to Michigan, Mexico to Canada (offshore and onshore), and internationally including South America, Europe, the Mid-East, and Asia.

Our team of consultants and engineers is dedicated to meeting your objectives using the highest standards of professionalism. Rimkus Consulting Group is available 24 hours a day to promptly respond to our clients needs.

Areas of Specialty

- ***ü Accounting***
- ***ü Architectural***
- ***ü Automotive***
- ***ü Biomechanics***
- ***ü Business Analysis***
- ***ü Chemical***
- ***ü Chemistry***
- ***ü Construction***
- ***ü Civil Engineers***
- ***ü Economics***
- ***ü Environmental***
- ***ü Electrical***
- ***ü Explosion***
- ***ü Fire Investigation***
- ***ü Geology***
- ***ü Graphic Arts***
- ***ü Hydrogeology***
- ***ü Hydrology***
- ***ü Marine***
- ***ü Materials***
- ***ü Mechanical***
- ***ü Metallurgy***
- ***ü Petroleum***
- ***ü Safety***
- ***ü Structural***
- ***ü Toxicology***
- ***ü Video Animation***

CORPORATE OFFICE
Houston, TX
713-621-3550 Toll Free 800-580-3228

OFFICE LOCATIONS	Dallas, TX 877-271-1168	San Antonio, TX 210-647-8400	Austin, TX 512-795-0811	Corpus Christi, TX 361-885-0599	McAllen, TX 956-683-1783
Tampa, FL 800-498-3060	Orlando, FL 800-625-3060	Ft. Lauderdale, FL 800-861-7644	Jacksonville, FL 877-661-1245	Atlanta, GA 866-565-3422	Phoenix, AZ 602-216-2200
New Orleans, LA 888-474-6587	Lafayette, LA 866-746-5876	www.rimkus.com		Chicago, IL 630-321-1846	Baltimore, MD 410-872-9000
Denver, CO 720-488-8710	Los Angeles, CA 714-978-2044	Indianapolis, IN 800-971-6587	Las Vegas, NV 702-304-1508	Charlotte, NC 877-896-6227	Madrid, Spain 011-34-60-638-7327
Jackson, MS 877-774-6587	San Francisco, CA 866-748-0379	Oklahoma City, OK 877-271-1168	Pensacola, FL 866-746-5876	New York, NY 877-368-8551	Kuwait City, Kuwait 965-251-3490

DAMAGE ANALYSIS FOR CONSISTENCY AND DETECTING FRAUD

Course Objective

Damage Analysis for Consistency and Detecting Fraud is a course designed to assist adjusters and investigators in determining if the claimed damage is consistent with the accident scenario. This course will cover phantom vehicle claims, wall impact damage versus vehicle impact damage, determining if the damage between two vehicles is consistent, and determining pole or tree impacts versus vehicle impacts. This course will also provide information on evaluating engine damage. Finally, multi-vehicle In-Line collisions will be discussed.

DAMAGE ANALYSIS FOR CONSISTENCY AND DETECTING FRAUD

Outline of Presentation

I. Introduction
   a. Types of claimed incidences
   b. Examples
   c. Witness statements

II. Types of Claimed Incidences
   a. Phantom vehicle
      - § Insured claims an unidentified vehicle struck them causing the accident
      - § Pinpoint the reported impact area and what happened
      - § Inspect impact area for contact marks
        1. Generally horizontal not vertical
        2. Paint transfers
        3. Wheel marks
        4. Wall impacts
      - § Determine where all damage came from
        1. Other involved vehicles
        2. Guardrails, walls, curbs, trees, etc.
      - § Determine sequence damage occurred
        1. Damage in a fold occurred before the fold
        2. Direction of scrapes (front-back or back-front)
      - § Contact marks can be very light and may not show up in photographs
   b. Wall impact vs. vehicle impact
      - § Concrete & brick walls leave rough, grainy, abrasive scrapes and scratches
      - § Scrapes directions fairly constant with fixed object impacts
      - § Vehicle to vehicle scrapes can vary in direction or angle as the vehicles move
      - § Paint transfers with vehicle scrapes and impacts
   c. Vehicle impacts with inconsistent damage

- § Damage to bullet consistent with target?
- § Principle Direction of Force (PDOF) consistent with both vehicles?
    1. PDOF: Direction force was applied to get the resulting damage or crush
    2. Do the vehicles line up at impact (impact configuration) using the PDOF for each vehicle

d. Pole impact vs. vehicle impact

- § Pole damage typically results in vertical damage or wedge

e. Stolen vehicle recovered with engine or other damage

- § Look for signs of forced entry
    1. Tampered locks, including trunk
    2. Broken windows
- § Look for signs of "hot wiring"
    1. Damage to steering column
    2. Damage to ignition lock
- § If owner now claims engine damage
    1. Engine oil analysis
    2. Look for high concentrations of iron, tin, copper, silicon, and lead
    3. Determine condition of engine
    4. Water in oil is usually from a blown head gasket
    5. High metal content ---- severe wear
- § Can also do transmission oil analysis

f. Multi-vehicle in-line collisions

- § Claim: last vehicle pushed others forward causing all impacts
- § In general lighter vehicles should have more damage
- § In general damage severity should decrease down the line
- § Angle of impacts
    1. Vehicles may get rotated as they collide
- § Bumper heights accounting for brake dive

III. Witness Statements

a. Get very detailed statement of what happened

- § Where did phantom vehicle (PV) strike insured's vehicle

- Which direction did PV come from

b. What color was PV

IV. Presenting Results

a. Arrange in understandable terms

b. Written report

- Letter report
- Formal report

c. Posters, demonstrative evidence, video animation

d. Coordination with attorney

e. Testimony

PRESENTER'S RÉSUMÉ

Dirk Smith
(Presenter)

Texas Department of insurance
Annual fraud conference

DAMAGE ANALYSIS FOR CONSISTENCY AND DETECTING FRAUD

TRAINING SEMINAR
Austin, TX

March 1, 2011

A Presentation Prepared by
Rimkus Consulting Group, Inc.

DIRK EDWARD SMITH, Ph.D., P.E.

SENIOR VICE PRESIDENT, FORENSIC DIVISION

Dr. Smith completed his Ph.D. in 1993 at Purdue University, where his research area was vehicle dynamics and control. Dr. Smith has taught courses in machine design, vibrations, and vehicle dynamics. Prior to returning to Purdue in 1989, he worked for Hughes Aircraft Company designing satellite structures. While at Louisiana State University, Dr. Smith was the Faculty Advisor for the SAE Mini-Baja Team. He supervised the design, fabrication, and testing of the off road vehicle.

Dr. Smith's research, engineering, and consulting backgrounds have provided him with experience in machine design, vibration analysis, vehicle dynamics, accident reconstruction (including cars, trucks, commercial vehicles, motorcycles, bicycles, and pedestrians), and data acquisition. In addition, Dr. Smith is the author of several conference and journal papers.

Dr. Smith has reconstructed accidents involving: commercial tractor/trailers, high-speed fatality collisions, daytime and nighttime pedestrian accidents, car-bicycle and car-motorcycle collisions, vehicle rollovers, and low-speed collisions for biomechanical analysis. Dr, Smith evaluates traffic signal timing relating to intersection collisions. He has also worked on product liability cases involving: vehicle systems, playground equipment, scaffolds, ladders, personal watercraft, and machine components. Dr. Smith has testified in state and federal courts.

EDUCATION and professional associations

Ph.D. - Mechanical Engineering - Purdue University, 1993

MSME - Mechanical Engineering - University of Southern California, 1989

BSME - Mechanical Engineering - Purdue University, 1986

Registered Professional Engineer - LA, TX, OK, NM, IL, AZ, GA, NV, IN, AL, FL, MS, NY, KS & MO

Accreditation Commission for Traffic Accident Reconstructionist, ACTAR #985

Certified forklift and aerial lift operator

Specialized courses:

Advanced Collision Reconstruction - Texas A&M University System, TEEX, 2/99

Fundamentals of Sensor Design for Automotive Air Bag Systems – SAE, 3/00

Crash Data Retrieval Training Seminar – Vetronix Corporation, 6/00

CDR Tool User Certification Course – IPTM, 2/04

Air Brake Course – Bendix 9/04

Reconstruction of Pedestrian or Bicyclist Involved Collisions – CSI, 5/06

CDR Users Conference – ARC-CSI, 1/07

CDR Data Technician and Analyst courses – CSI, 1/08

Detroit Diesel DDEC Reports Training CD – 10/08

Crash Reconstruction at Traffic Signal Intersections – Forensic Traffic Specialist, 5/2010

Member: ASME, SAE, TAARS

EMPLOYMENT HISTORY

1996 - Present	Rimkus Consulting Group, Inc.
1993 - 1997	Louisiana State University
1989 - 1993	Purdue University
1986 - 1989	Hughes Aircraft Company

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

Senior Vice President-Forensic Division (V.P. 2001 – 2008) **2001 - PRESENT**

Provide vehicle accident analysis, including computer-aided vehicle accident reconstruction. Accident reconstruction experience includes car, truck, semi-tractor/trailer, motorcycle, bicycle, and pedestrian accidents. Provide mechanical design analysis, and component failure analysis.

Manage the Forensic and Mechanical Analysis Group company wide. Specify and review equipment purchases. Review forensic reports from outlying offices. Provide marketing support and give seminars nationwide. Train new employees.

Division Manager **1998 - 2000**

Provide vehicle accident analysis, including computer-aided vehicle accident reconstruction. Accident reconstruction experience includes car, truck, semi-tractor/trailer, motorcycle, bicycle, and pedestrian accidents. Provide mechanical design analysis, and component failure analysis.

Manage the Forensic and Mechanical Analysis Division in the Houston office. Review forensic reports from outlying offices. Train new employees in accident reconstruction.

Senior Consultant **1996 - 1998**

Provide vehicle accident analysis, including computer-aided vehicle accident reconstruction. Provide mechanical design analysis, and component failure analysis.

LOUISIANA STATE UNIVERSITY **1993 - 1997**

Assistant Professor of Mechanical Engineering

Teach undergraduate and graduate courses in machine design, vibrations and vehicle dynamics. Conduct funded research in vehicle dynamics, nonlinear systems simulation and control, accident reconstruction, vibration analysis and isolation, and machine design.

PURDUE UNIVERSITY **1989 - 1993**

Research & Teaching Assistant

Conducted research in vehicle dynamics and automated vehicle control. Developed vehicle simulation program. Coordinated and taught in machine design lab.

HUGHES AIRCRAFT COMPANY **1986 - 1989**

Member of Technical Staff

Designed, analyzed, and integrated spacecraft structure.

DIRK EDWARD SMITH, Ph.D., P.E.

PUBLICATIONS

- Smith, Dirk; Benton, Robert and Starkey, John, 2000, "Nonlinear-Gain-Optimized Controller Development and Evaluation for Automated Emergency Vehicle Steering," International Journal of Vehicle Design, **24**(1):79-99.
- Benton, Robert E and Smith, Dirk, 1999, "A Non-iterative LMI-based Algorithm for Robust Static-Output-Feedback Stabilization," International Journal of Control, **72**(14):1322-1330.
- Benton, Robert E and Smith, Dirk, 1998, "Static-Output-Feedback Stabilization with Prescribed Degree of Stability," IEEE Transactions on Automatic Control, **43**(10):1493-1496.
- Feldman, Martin and Smith, Dirk, 1998, "Wafer Chuck for Magnification Correction in X-Ray Lithography," Journal of Vacuum Science and Technology, **16**(6):3476-3479.
- Smith, Dirk E. and Benton, Robert E., 1996, "Automated Emergency Four-Wheel-Steered Vehicle Using Continuous Gain Equations," Vehicle System Dynamics, **26**(2):127-142.
- Smith, Dirk E. and Starkey, John M., 1995, "The Effects of Model Complexity on the Performance of Automated Vehicle Steering Controllers: Model Development, Validation, and Comparison", Vehicle System Dynamics, **24**(2):163-181.
- Smith, Dirk E. and Starkey, John M., 1995, "Automated Emergency Steering Using Continuous Gain Equations", International Journal of Vehicle Design, **16**(1):1-14.
- Smith, Dirk E. and Starkey, John M., 1994, "The Effects of Model Complexity on the Performance of Automated Vehicle Steering Controllers: Controller Development and Evaluation", Vehicle System Dynamics, **23**(8):627-645.

PRESENTATIONS

- Smith, Dirk, 2001, "Building an Animation," Transportation Megaconference V, Trucking and Motor Carrier Litigation, American Bar Association, Tort and Insurance Practice Section, New Orleans, LA, March 15-16.
- Air Bag and Pretensioner Technology, 1-hour seminar presented to numerous insurance companies.
- Air Brake Systems and Analysis, 1-hour seminar presented to numerous insurance companies.
- Impact and Damage Analysis of Low Speed Vehicle Collisions, 1-hour seminar presented to numerous insurance companies.

- How to Analyze and Photograph Vehicular Accidents, 1-hour seminar presented to numerous audiences.
- Vehicle Accident Reconstruction, 1-hour seminar presented to numerous audiences.
- Vehicle Accident Reconstruction, 3-hour seminar presented to numerous audiences.
- Technology in Collision Reconstruction, 1-hour seminar presented to numerous audiences.
- Damage Analysis for Consistency and Detecting Fraud, 1-hour seminar presented to numerous insurance companies.
- Human Biomechanics in Low Speed Vehicle Collisions, 1-hour seminar presented to numerous audiences.
- Smith, Dirk, 1999, "Prevention from Reoccurrence – Using Accident Reconstruction to Find the True Causative Agent During Accident Investigation." North American Safety in the Workplace Week Joint ASSE/IAPA Conference, Detroit, MI, May 17, 1999.
- Benton, Robert E and Smith, Dirk, 1997, "Output-Feedback Stabilization with Prescribed Degree of Stability," In Proceeding of the 1997 American Controls Conference, Albuquerque, NM.

- Benton, Robert and Smith, Dirk, 1996, "Eigenvalue Assignment Optimization for Stable and Unstable Systems", In Proceedings of the 28th IEEE Southeastern Symposium on System Theory, Baton Rouge, LA, March 31 - April 2, p. 369 - 373.
- Smith, Dirk E.; Starkey, John M. and Benton, Robert E., 1995, "Nonlinear-Gain-Optimized Controller Development and Evaluation for Automated Emergency Steering", In Proceedings of the 1995 American Control Conference, Vol. 5, Seattle, WA, June 21-23, p. 3586 - 3591.
- Smith, Dirk E. and Starkey, John M., 1991, "Overview of Vehicle Models, Dynamics, and Control Applied to Automated Vehicles," Advanced Automotive Technologies 1991, ASME, DE-Vol. 40, pp. 69, 87.